Infections of the Fetus and Newborn Infant

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Cytomegalovirus (CMV) is the major cause of perinatal viral infections. One to two per cent of infants in the U. S. are congenitally infected; of these about 10% are or become symptomatic with such sequelae as deafness and mental retardation. Such infants excrete CMV in the urine at birth. Another 5 per cent of infants are natally infected and begin to excrete virus at age 1-2 months. Natal infection is probably benign (1).

CMV causes latent infection following primary attack, as do other herpesviruses. Women are usually asymptomatic during primary or reactivation infections. Cervical reactivation of CMV is common during pregnancy. Infants may be infected during maternal primary or reactivation CMV infections, but only those infants whose mothers have primary disease develop significant sequelae (2). This phenomenon forms the basis for development of a live attenuated CMV vaccine. Diagnosis of CMV infection is made by urine culture, and confirmed by antibody titers. No treatment is available.

Herpes simplex viruses I and II are important perinatal pathogens. Type II is more frequent than Type I. Rarely HSV is placentally transmitted; the usual mode of infection is by contact of the infant with maternal genitalia. Infants may be significally infected after both primary and recurrent maternal genital HSV. About 70% of HSV infected infants are born to women with no symptoms of genital HSV at delivery (3). Since genital HSV infections appear to be increasing (4), it might be expected that infections of the newborn may also increase.

Newborns with HSV are rarely asymptomatic. About 80% have vesicular skin lesions that are an important diagnostic clue. The infection may be localized (skin, eye, CNS) or disseminated. The prognosis is poor, with death in 50-85% and sequelae such as retardation in 90% of survivors (5). The antiviral drug adenine arabinoside (Ara-A) may be effective for treatment (5). Prevention of infection of infants is frequently attempted by cesarian section of mothers with known genital HSV.

Chlamydia are also sexually transmitted pathogens with important sequelae for infants. Chlamydia share character-

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istics of both bacteria and viruses. Conjunctivitis due to chlamydia occurs in about half the infants born to infected mothers, and ten to fifteen per cent develop chlamydia pneumonia between the ages of 1-3 months (6). These babies have cough, intersitial pneumonia, eosinophilia, hyperglobulinemia and no fever. Recovery is hastened by erythromycin or sulfa (7).

Group B Streptococcus (GBS) is the major cause of bacterial sepsis and meningitis in the neonate. This organism is also spread sexually among adults. Infants may develop early (sepsis, pneumonia) or late (localized: meningitis, cellulitis) infections. Infection: colonization ratios are 1:100. Lack of maternally transmitted type specific antibody in colonized infants accounts for development of infection (8). A recent controlled study has shown that one injection of aqueous penicillin at birth protects against early GBS infection (9).

References

1. Stagno, S., D. W. Reynolds, A. Tsiantos, D. A. Fuccillo, W. Long, C. A. Alford, Jr.: Comparative, serial virologic and serologic studies of symptomatic and subclinical congenital and natally acquired cytomegolovirus infections. J. Infect. Dis. 132 (1975) 568

2. Stagno, S., D. W. Reynolds, E-S. Huang, S. D. Thames, R. J. Smith, C. A. Alford, Jr.: Congenital cytomegalovirus infection: occurrence in an immune population. New Eng. J. Med. 296 (1977) 1254

3. Whitley, R. J., A. J. Nahmias, A. M. Visintine, C. L. Fleming, C. A. Alford: The natural history of herpes simplex virus infection of mother and newborn. Pediatrics 66 (1980) 489

4. Sumaya, C. V., J. Marx, K. Ullis: Genital infections with herpes simplex virus in a university student population. Sexually Trans. Dis. 7 (1980) 16

5. Whitley, R. J., A. J. Nahmias, S-J. Soong, G. G. Galasso, C. L. Fleming, C. A. Alford: Vidarabine therapy of neonatal herpes simplex virus infection. Pediatrics 66 (1980) 495

6. Hammerschlag, M. R., M. Anderka, D. Z. Semine, D. McComb, W. M. McCormack: Prospective study of maternal and infantile infection with chlamydia trachomatis. Pediatrics 64 (1979) 142

7. Beem, M. O., E. Saxon, M. A. Tipple: Treatment of chlamydial pneumonia of infancy. Pediatrics 63 (1979) 198

8. Baker, C. J., D. L. Kasper: Correlation of maternal antibody deficiency with susceptibility to neonatal Group B streptococcal infection. N. Engl. J. Med. 294 (1976) 753

9. Siegel, J. D., G. H. McCracken, Jr., N. Threlkeld, B. Milvenan, C. R. Rosenfeld: Single-dose penicillin prophylaxis against neonatal group B streptococcal infections: a controlled trial in 18,738 newborn infants. N. Engl. J. Med. 303 (1980) 769

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